COMPANY
Capabilities & Solutions

Detailing IBG's capabilities, expertise, services and solutions

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Contents

1 INTRODUCTION

1.1 BACKGROUND

Independent Business Group (IBG) begun its journey with an ambition to act as an independent consulting company for activities on the airside at airports. During the years, IBG has successfully performed many projects throughout the MENA region, Asia and Europe. In 2018 IBG were considered for a large complex project to support the Civil Aviation Authority (CAA) to prepare for the FIFA World Cup that had one major difference from earlier performed projects.

The size of the project was so large that IBG and with a support from Business Sweden who backed IBG ambitions with engagement of the Swedish Ambassador, Foreign Affairs, LFV, State Secretary for Trade and the Swedish Financial institutions, SEK and EKN we were awarded.

We were eventually awarded the AED 500M project and throughout the project in IBG has grown rapidly from a SME level company to become a mid-Corp company with a turnover during 2022 close to EUR 50 million.

1.2 VISION AND MISSION

At IBG, our mission is to be the leading consultancy firm in the air traffic management industry, delivering exceptional expertise, innovative solutions, and strategic guidance to our clients. We are dedicated to enhancing safety, efficiency, and sustainability in the global airspace, enabling seamless and reliable air transportation for the benefit of passengers, airlines, airports, and air navigation service providers.
Our Values:
— **Excellence**: We strive for excellence in everything we do. We are committed to delivering the highest quality of services and solutions that meet and exceed our clients' expectations. We continuously improve our knowledge, skills, and methodologies to stay at the forefront of the air traffic management industry.
— **Collaboration**: We believe in the power of collaboration. We foster strong partnerships with our clients, industry stakeholders, and technology providers to create synergies and drive innovation. By working together, we leverage collective expertise and insights to address complex challenges and achieve sustainable results.
— **Integrity**: Integrity is at the core of our business. We uphold the highest ethical standards, maintaining transparency, honesty, and confidentiality in all our interactions. We are trusted advisors to our clients, providing objective and unbiased guidance to support their decision-making processes.
— **Innovation**: We embrace innovation as a driving force for progress. We continuously explore emerging technologies, industry trends, and best practices to develop innovative solutions tailored to the unique needs of our clients. We encourage a culture of creativity, curiosity, and forward-thinking to shape the future of air traffic management.
— **Client-Centric Approach**: Our clients are at the center of everything we do. We listen attentively to their needs, understand their challenges, and customize our services to their

specific requirements. We build long-term partnerships based on mutual trust, respect, and a deep commitment to their success.

Our Services:

— **Strategic Consulting**: We provide strategic consulting services to help our clients navigate the evolving air traffic management landscape. From market analysis and business planning to policy development and regulatory compliance, we offer insights and recommendations to shape their long-term strategies.

— **Operational Optimization**: We assist our clients in optimizing their air traffic management operations. Through data analysis, process improvement, and performance evaluation, we identify bottlenecks, enhance efficiency, and streamline operations for maximum productivity and safety.

— **Technology Implementation**: We support our clients in adopting and integrating cutting-edge technologies for air traffic management. From communication systems and surveillance solutions to navigation aids and automation tools, we provide guidance in selecting, implementing, and managing the most suitable technologies.

— **Safety and Risk Management**: We help our clients establish robust safety and risk management frameworks. Through safety assessments, risk analysis, and compliance audits, we identify potential hazards and develop strategies to mitigate risks, ensuring the highest levels of safety across the airspace.

— **Training and Capacity Building**: We offer comprehensive training programs and capacity-building initiatives for air traffic management professionals. Our tailored training modules cover a range of topics, including airspace management, air traffic control procedures, and regulatory requirements, empowering individuals and organizations to excel in their roles.

— **Research and Innovation**: We actively engage in research and innovation initiatives to advance the air traffic management industry. Through partnerships with academia, industry organizations, and technology providers, we contribute to the development of new concepts, technologies, and best practices.

By embracing our mission and values, we aim to make a positive impact on the air traffic management industry. We are dedicated to helping our clients navigate the complexities of airspace management, improve operational efficiency, enhance safety, and shape a sustainable future for air transportation. Together, we strive to create a connected, efficient, and safe global airspace system that meets the needs of the present and future generations.

2   COMPREHENSIVE SOLUTIONS

2.1   AIRSPACE & FLIGHT PROCEDURES

IBG airspace department offers airspace & procedure design, sectorization solutions and associated Flight Procedures, SIDs & STARs to safely optimize the use of airspace.

The IBG Airspace & Procedure Design department is your go-to solution for comprehensive, end-to-end services that address every element of an Airspace & Procedure Design project. Our approach is deeply rooted in best practices, strictly adhering to our airspace change process which is aligned with international standards as outlined in ICAO-Doc_4444, ICAO-Doc_9992, 8 ICAO-Doc_168, ICAO-Doc_9426, ICAO-Doc_9613, ICAO-Doc_9931, and ICAO-Doc_9993.

This adherence ensures not only the utmost safety and efficiency but also full compliance with globally recognized standards and regulations. With IBG, you can be assured that your airspace and procedure design will meet the highest standards of excellence and regulatory compliance.

It's crucial to recognize that while there is a standard set of key activities often involved in an Airspace & Procedure Design project, each project is unique and may demand additional or specialized activities to meet its needs. Here are some key services that are generally undertaken by IBG, drawn from our comprehensive airspace change process.

— Initial Planning and Assessment:
- o Feasibility Studies
- o Regulatory Compliance Review
- o Initial Airspace Assessment
- o Stakeholder Engagement and Consultation
- o Risk Assessment

— Airspace Design:
- o Conceptual design
- o PansOps design
- o Airspace Classification and Structuring
- o Route Network Design
- o Vertical and Lateral Limits Definition
- o Navigational Aid Placement and Optimization
- o Sectorization Solutions

— Procedure Design:
- o Standard Instrument Departures (SIDs) Design
- o Standard Terminal Arrival Routes (STARs) Design
- o Instrument Approach Procedures (IAPs) Design
- o Missed Approach Procedures Design
- o Holding Procedures Design
- o Visual Flight Rules (VFR) Procedures Design

— Validation and Simulation:
  o Fast Time Simulation
  o Ground Validation
  o Flight Validation
  o Realtime Simulation
  o Capacity and Delay Analysis
  o Safety Modelling
  o Environmental Impact Modeling (Noise, Emissions, etc.)
— Safety and Risk assessment
  o Drafting of Airspace Change Proposals
  o Validation Testing (often using simulation tools)
  o Training of Air Traffic Controllers
  o Initial Implementation (often in stages)
  o Safety Assessments
— Documentation, Compliance, and regulatory approval:
  o Procedure Documentation and Publication
  o Compliance Checks and Auditing
  o Airspace Manuals and Charts Update
  o Filing with Regulatory Authorities
— Post-Implementation Monitoring and Review:
  o Performance Metrics Monitoring
  o Feedback Collection from Stakeholders
  o Periodic Safety Audits
  o Procedure and Airspace Updates as Necessary

2.2 CAPACITY

IBG capacity department offers solutions to enhance safety & increase the throughput within terminal areas & airports by implementing the best practices & improving procedures.

IBG´s main line of work in the scope of Capacity includes the following:
— Capacity Assessment and Planning:
  o Conduct assessments of airports, air traffic control systems, and airspace to evaluate their current capacity limitations.
  o Develop capacity forecasts and long-term planning strategies to accommodate future growth in air travel demand.
  o Identify bottlenecks and constraints in airport infrastructure and air traffic management systems.
— Airport Capacity Enhancement:
  o Work with airports to optimize terminal and runway capacity by redesigning layouts, improving passenger flow, and implementing advanced technology solutions.
  o Assist in the planning and development of new airport facilities or expansion projects to increase capacity.

- o Analyze and recommend strategies for managing peak passenger flows and aircraft movements.
— Air Traffic Management (ATM) Optimization:
- o Collaborate with air navigation service providers (ANSPs) and aviation authorities to improve the efficiency of air traffic control operations.
- o Implement advanced air traffic management tools and procedures to increase airspace capacity.
- o Provide support for the implementation of performance-based navigation (PBN) procedures to optimize routing and reduce congestion.
— Route Optimization:
- o Analyze and optimize flight routes to reduce congestion in busy airspace regions.
- o Develop strategies for more efficient air traffic flow management, including dynamic airspace management.
- o Promote collaborative decision-making among airlines, airports, and ANSPs to optimize route planning and reduce delays.
— Capacity Utilization Modeling:
- o Use advanced modeling and simulation tools to predict and optimize airport and airspace capacity.
- o Conduct scenario analyses to determine the impact of various operational changes and capacity enhancements.
- o Provide data-driven insights to support capacity planning decisions.
— Regulatory Compliance and Safety:
- o Ensure that capacity enhancements and operational changes comply with aviation regulations and safety standards.
- o Conduct safety assessments and risk analyses related to capacity expansion projects.
- o Assist clients in obtaining necessary approvals and permits for capacity-related initiatives.
— Stakeholder Coordination:
- o Facilitate collaboration among airlines, airports, ANSPs, and government agencies to address capacity challenges collectively.
- o Participate in industry working groups and initiatives focused on capacity optimization and airspace management.
— Technology Integration:
- O Advise on the integration of advanced technologies such as automation, artificial intelligence, and data analytics to improve capacity management and operational efficiency.

2.3   TRAINING & WORKFORCE

IBG work closely with customers to identify training requirements & determine workforce needs to support the implementation of airspace & ATM/CNS changes.
Our main lines of work are the following:

— Training Program Development:
  o Curriculum Design: Collaborate with aviation clients to design comprehensive training curricula tailored to their specific needs, whether it's for pilots, air traffic controllers, maintenance technicians, or other aviation professionals.
  o Regulatory Compliance: Ensure that all training programs align with the relevant aviation regulations, standards, and certifications, such as those set by the Federal Aviation Administration (FAA) or the International Civil Aviation Organization (ICAO).
  o E-Learning Solutions: Develop and implement e-learning platforms and digital training materials to facilitate remote and flexible learning options.
— Training Needs Assessment:
  o Skill Gap Analysis: Conduct assessments to identify skill gaps within an organization and recommend targeted training solutions to bridge those gaps.
  o Training Effectiveness Evaluation: Evaluate the effectiveness of existing training programs through data analysis, feedback collection, and performance metrics, and make recommendations for improvement.
— Workforce Planning and Management:
  o Workforce Planning: Assist aviation organizations in forecasting their workforce needs based on growth, retirements, and other factors, and develop strategies to ensure an adequate and skilled workforce.
  o Succession Planning: Help clients develop plans for identifying and preparing employees for key leadership and technical positions to ensure a smooth transition as experienced staff members retire.
  o Talent Acquisition: Provide guidance on effective recruitment and hiring strategies to attract and retain top aviation talent.
— Safety and Compliance Training:
  o Safety Programs: Develop safety training programs to enhance safety culture and compliance with safety regulations, including programs for Hazardous Materials (HazMat) handling, emergency procedures, and safety reporting.
  o Security Training: Offer training related to aviation security measures, such as access control, threat recognition, and emergency response.
— Technology Integration:
  o Training Simulators: Advise on the implementation of advanced training simulators, such as flight simulators or air traffic control simulators, to provide realistic and cost-effective training experiences.
  o Learning Management Systems (LMS): Assist in the integration and customization of LMS software to manage training programs, track employee progress, and streamline record-keeping.

— Certification and Compliance Support:
  o Regulatory Expertise: Stay current with aviation regulations and assist clients in preparing for audits and certification processes, ensuring their training programs meet industry standards.
  o International Standards: Offer guidance on compliance with international standards for aviation training, such as ICAO Training and Licensing Guidelines.
— Customized Training Delivery:
  o On-Site Training: Provide on-site training services, workshops, and seminars tailored to an organization's unique needs and objectives.
  o Train-the-Trainer Programs: Train client personnel to become effective trainers and instructors within their organizations.
— Continuous Improvement:
  o Performance Metrics: Implement performance metrics and Key Performance Indicators (KPIs) to monitor the effectiveness of training programs continually.
  o Feedback Loops: Establish mechanisms for collecting feedback from trainees and instructors to make ongoing improvements.

2.4   CNS / ATM

IBG offers turnkey and PMC solutions to upgrade, procure and deploy CNS/ATM equipment to enable and support ANSPs to safely achieve their objectives. This solution may include the following:
— Communication Systems:
  o Communication Infrastructure Design: Design and optimization of ground-based and satellite-based communication systems to ensure seamless and reliable communication between air traffic control, aircraft, and ground personnel.
  o Voice and Data Communication Solutions: Implementation of advanced voice and data communication technologies, including digital radio systems, datalink communication, and the integration of data exchange protocols like CPDLC (Controller-Pilot Data Link Communications).
— Navigation Systems:
  o Navigation Infrastructure Enhancement: Assessment and improvement of navigation aids and systems, such as VOR (VHF Omni-Directional Range), NDB (Non-Directional Beacon), and the deployment of more advanced technologies like GNSS (Global Navigation Satellite System).
  o RNAV/RNP Procedures: Development of Required Navigation Performance (RNP) and Area Navigation (RNAV) procedures to enhance aircraft navigation accuracy and efficiency.
— Surveillance Systems:
  o Surveillance Infrastructure Optimization: Evaluation and upgrading of surveillance systems, including radar and ADS-B (Automatic Dependent Surveillance-Broadcast), to enhance aircraft tracking accuracy and coverage.
  o Conflict Detection and Resolution: Implementation of systems for detecting and mitigating potential conflicts between aircraft, including the use of advanced conflict detection algorithms.

— Air Traffic Management (ATM):
  o ATM System Integration: Integration of various ATM systems and technologies to improve the management of air traffic flow, including the integration of air traffic control systems with surveillance and navigation systems.
  o ATM Efficiency Enhancement: Consulting on strategies and technologies to optimize air traffic management, reduce congestion, and minimize delays.
  o ATM Modernization: Guidance on the adoption of modern ATM concepts such as SESAR (Single European Sky ATM Research) in Europe or NextGen in the United States.
— Regulatory Compliance and Safety Assurance:
  o Compliance Audits: Conduct audits to ensure that your clients' CNS and ATM systems meet the regulatory requirements set forth by aviation authorities like the FAA, EASA, and ICAO.
  o Safety Assessment: Perform safety assessments to identify potential risks in communication, navigation, surveillance, and air traffic management systems and provide recommendations for mitigation.
— Training and Capacity Building:
  o Training Programs: Develop training programs for air traffic controllers, technicians, and other personnel involved in CNS and ATM operations.
  o Capacity Building: Assist aviation organizations in building capacity to manage and maintain their CNS and ATM infrastructure effectively.

2.5   AIRPORT OPERATIONS

Assist airport Operators to assess the operations against ICAO Standards and Internationally approved *Best Practices*.
— Airport Management and Strategy:
  o Strategic Planning: Assist airports in developing long-term strategic plans to achieve their goals, enhance competitiveness, and address evolving industry trends.
  o Master Planning: Create airport master plans that outline infrastructure development, capacity enhancements, and land use planning.
  o Operational Optimization: Identify opportunities to streamline airport operations, improve resource allocation, and reduce costs.
— Safety and Security:
  o Safety Audits and Assessments: Conduct safety audits to ensure compliance with aviation safety regulations and recommend improvements.
  o Security Measures: Advise on security procedures, technology implementations, and compliance with aviation security standards.
— Terminal Operations:
  o Passenger Flow Analysis: Optimize passenger flows within terminals to reduce congestion and enhance the passenger experience.
  o Retail and Commercial Operations: Assist in maximizing non-aeronautical revenue through the effective management of retail, dining, and commercial spaces.

— Airside Operations:
  o Aircraft Movement Planning: Optimize aircraft movements on runways and taxiways to reduce delays and improve efficiency.
  o Apron Management: Efficiently allocate and manage aircraft parking and servicing resources on the apron.
— Ground Handling and Services:
  o Ground Handling Evaluation: Assess and recommend improvements in ground handling services to enhance aircraft turnaround times.
  o Aircraft Services: Advise on aircraft services such as refuelling, catering, and maintenance support.
— Environmental Sustainability:
  o Environmental Impact Assessments: Evaluate and develop strategies to reduce the environmental footprint of airport operations.
  o Energy Efficiency: Recommend energy-efficient technologies and practices to reduce operational costs and environmental impact.
— Regulatory Compliance:
  o Compliance Audits: Ensure airports adhere to local and international regulations, including safety, security, and environmental standards.
  o Permitting and Licensing: Assist in obtaining necessary permits and licenses for airport operations and expansions.
— Emergency and Crisis Management:
  o Emergency Planning: Develop emergency response plans to address various scenarios, including natural disasters and security incidents.
  o Crisis Communication: Advise on effective communication strategies during crisis situations.
— Technology Integration
  o Aviation Technology: Recommend and implement the latest technology solutions for airport operations, including airport management systems and passenger information systems.
— Training and Capacity Building:
  o Staff Training: Provide training programs for airport personnel in areas such as safety, security, and customer service.
  o Capacity Development: Assist airports in building organizational capacity to handle increased traffic and growth.
— Financial Analysis and Management:
  o Financial Planning: Develop financial strategies and budgets to ensure the sustainability of airport operations.
  o Revenue Enhancement: Identify opportunities for revenue generation through landing fees, concessions, and other sources.
— Stakeholder Engagement:
  o Community Relations: Foster positive relationships with local communities and stakeholders to mitigate noise and environmental concerns.
  o Government and Regulatory Affairs: Engage with government agencies and regulators on behalf of the airport to address regulatory issues.

Figure 1. ISO 9001 and ISO 14001 Certificate

ISO 9001 is the international standard for Quality Management Systems (QMS). It provides a framework for organizations to establish, implement, maintain, and continually improve a system for managing quality. The primary goal of ISO 9001 is to ensure that an organization consistently delivers products or services that meet customer requirements while also improving efficiency and effectiveness.

Key principles of ISO 9001 include:
— customer focus
— leadership
— engagement of people
— process approach
— improvement
— evidence-based decision making
— relationship management.

Organizations that implement ISO 9001 often seek to enhance customer satisfaction, reduce waste, and enhance their overall operational performance.

ISO 14001 is the international standard for Environmental Management Systems (EMS). It outlines the requirements for organizations to establish and maintain an effective EMS to manage their environmental responsibilities and impacts. The goal of ISO 14001 is to help organizations minimize their environmental footprint and demonstrate a commitment to sustainable practices.

Key principles of ISO 14001 include:
— commitment to environmental protection
— compliance with legal
— regulatory requirements
— prevention of pollution
— continual improvement of environmental performance

consideration of life-cycle perspectives when making decisions that affect the environment. Organizations that implement ISO 14001 aim to reduce their environmental impact, manage resources efficiently, and meet legal and stakeholder environmental expectations.

Both ISO 9001 and ISO 14001 are part of the ISO 9000 family and are based on the High-Level Structure (HLS), which makes it easier for organizations to integrate multiple management systems (e.g., QMS and EMS) if desired.

4 BUSINESS MODEL

The differential with IBG compared to our competitors is our proven and successful business model. This includes IBG taking 100% accountability and responsibility to produce specifications and designs for all equipment and systems and then produce and release Request for Proposals to specialised vendors. Upon our evaluation of both the technical and commercial bids, IBG then make recommendations to the client for award. Once awarded, IBG then sub-contract the vendor and execute the project up to handover and warranty.

We manage this successfully by employing the most experienced Subject Matter Experts in all fields and implementing a full Project Management Organisation that are responsible and deliver all projects from inception to handover.

An example would be our previous on time delivery in the region. We worked directly with different stakeholders and were contracted by the client to be responsible and accountable to deliver thirty two (32) simultaneous projects from equipment projects such as L and S Band Radars, SMRs and MLATs, VCCS, RPS and a newly built Air Traffic Control Centre with all ATM Systems as well as Capacity projects such as Independent Parallel Operations (IPO), AMAN/DMAN, Air Traffic Flow Management (ATFM) system and a Distance/Time Based Separation (DTBS) Tool to name a few.

IBG also designed and implemented a new Airspace solution inclusive of all procedures, validations, simulations, safety studies and regulatory requirements that resulted in publication. This increased capacity and safety intime for the FWC that also catered operationally for the Flight Information Region.

Furthermore, IBG provided training for all the new systems and the airspace. We also recruited on our books Air Traffic Controllers who were seconded to the client.

5 LEVELS OF ENGAGEMENT

5.1 CONSULTANCY FRAMEWORK

IBG's Consultancy Framework agreements streamline negotiations, save time, and offer faster consultant deployment. With pre-agreed key contractual terms and a flexible approach, we deliver cost-effective solutions.

5.2 TASK-BASED CONSULTANCY

Our Time-based consultancy model offers a range of services, from small studies to larger infrastructure projects, and our experienced consultants tailor solutions to customers' requirements and needs.

5.3 PROJECT MANAGEMENT CONSULTING

Our flexible, transparent, and internationally best-practice approach ensures the painless delivery of PMC projects on time and within budget. We provide high flexibility to work with clients closely, managing all project risks while providing tangible deliverables.

5.4 TURNKEY

With Turnkey delivery, IBG works with our partners to offer fully committed solutions for specific work packages, reducing procurement by the client. Our approach includes activity and resource planning, project team organization, risk management, progress monitoring, contract and procurement review, and more.